ELEC/BIOE 482 Physiological Control Systems

Spring Semester 2015

Date	Topic
12-Jan	Orientation - First Class - Anatomy of the Heart
14-Jan	Microanatomy of the Cardiac Cell
19-Jan	No class - MLK Day
21-Jan	Basic Membrane Electrophysiology; Voltage Clamp Technique
26-Jan	Hodgkin-Huxley Theory
28-Jan	Numerical Solution of Ordinary Differential Equations
2-Feb	Cardiac Cell Models -- Pacemaker and Left Ventricular Cell Models
4-Feb	Overview of Op-amps; Biopotential Amplifiers I
9-Feb	Biopotential Amplifiers II
11-Feb	The Electrocardiogram and Ventricular Activation
16-Feb	Mechanical Behavior of Cardiac Cells
18-Feb	Mechanical Behavior of the Whole Heart (Pressures, Volumes and Flow)
23-Feb	Mechanical Properties of Vessels (Arteries, Capillaries and Veins)
25-Feb	Models of Ventricular Mechanics and Arterial Hemodynamic Load
2-Mar	Spring Break
9-Mar	The Cerebral Circulation
11-Mar	Autonomic Nervous System (ANS I): Anatomy
16-Mar	Baroreceptors Term Project Selection Day
18-Mar	ANS II: The Nucleus Tractus Solatarius (NTS) and Blood Pressure Control
20-Mar	Quiz #1 (Review Session Thursday 19 March; TBA (4-5:30 pm))
23-Mar	Anatomy of the Eye; Phototransduction
25-Mar	Autonomic Innervation of the Eye; Pupillary Light Reflex & Lens Accomodation
30-Mar	Neurovascular Control of the Retinal Circulation
1-Apr	Mechanics of Breathing
6-Apr	Measurement of Airflow and Lung Volume
8-Apr	A Model of Lung Mechanics Progress Report Due on Term Project
13-Apr	Gas Transport in the Lungs and Tissues
15-Apr	Neural Control of Respiration
20-Apr	Modeling Respiratory Rhythm Generation
22-Apr	Quiz #2 (Review Session Tuesday 21 April; TBA (4:00 - 5:30 pm))
27-Apr	Term Project Due Electronically by 5 pm

Requirements:

2 Quizzes ~ 70 points each

Term Paper = 70 points

6 Homeworks at 10 points each = 60 points